# WR-5 User Reference

1. Introduction:

The WR-5 is a microprocessor based remote control unit for the Protea 24.24M, Ashly's multi-channel DSP matrix processor. The WR-5 is designed to fit into a standard electrical wall box for remote control of assignable 24.24M functions. Each of six buttons on the WR-5 can be programmed to engage one of the following functions: preset recall/scroll, channel volume, mute, or zone source selection. Programming of each button is done from software, when the WR-5 is connected to its host 24.24M, and the 24.24M is in turn connected to a PC using Protea System Software (version 6.4 or greater). Multiple WR-5 units can be daisy-chained from the same 24.24M for discrete control over multiple locations under the processing control of one 24.24M.

Installations which currently use WR-3 or WR-4 units can integrate a WR-5, but special wiring requirements apply (see section 3). For new installations, Ashly recommends exclusive use of the WR-5.

2. WR-5 Features:

The WR-5 can be thought of primarily as a programmable zone controller. The physical acoustic space in which one WR-5 is installed is generally considered one zone, driven by a 24.24M output or group of outputs.

The WR-5 has six programmable buttons, each with its own status LED. Button programming is done in Protea System Software (V6.4 or higher). There is a pocket in the mylar overlay to the right of each button for a paper label to be inserted. The two up/down buttons adjust overall zone volume level (if programmed) or individual button parameters. The numeric LED displays zone volume level, button/function values, or status/diagnostic indicators.
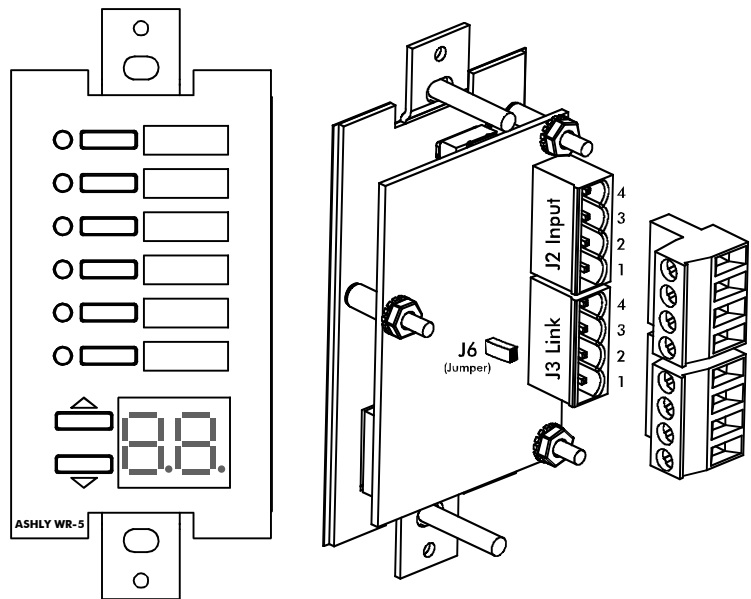
On the back of the WR-5 unit, two four pin euroblock connectors are used for data INPUT from a 24.24M, or LINK for connecting to another WR-5. There is also a two pin jumper labelled "J6" which requires the provided female jumper to be installed if the WR-5 is the last one in the data chain.

3. Wiring and Mounting a WR-5:

All wire connections between a WR-5 and the 24.24M use a two-piece euroblock connectors, a screw-terminal plug for the wire connections, and the mating jack on the product itself.

The WR-5 uses a four conductor serial bus to connect to the 24.24M and to subsequent WR-5 units, with a serial bus termination (WR-5 jumper J6) required on the last WR-5. Four conductor telephone wire is suitable, as well as CAT5, but if shielded wiring is used be sure to ground the source end. *Under no circumstances should shielding be left unconnected to ground, as the added line capacitance will degrade the data signal.*

Maximum distance to the first WR-5 is <400ft (120m). Maximum distance from first WR-5 to the next WR-5 is <1000ft (300m).

Wiring a WR-5 to a 24.24M

Each WR-5 has two four-pin euroblock connectors on the back of the unit, one labeled "INPUT" and the other labeled "LINK". Connect the four conductor serial bus wire from the 24.24M to the WR-5 INPUT as follows:

If more than one WR-5 is being used, connect the next length of four conductor bus wire from the first WR-5's "LINK" euroblock connector to the following WR-5 "INPUT" connector, and so on, until the last WR-5 is wired. On the last WR-5 in the chain, even if there is only one WR-5, install the female jumper on J6 on the back of the pcb to terminate the serial data bus, and make sure all prior WR-5 units have that jumper removed.

Note: If more than four WR-5 units are required, an external power supply must be used instead of the 24.24M +18V supply. See section 6 for details.

Replacing a WR-3 or WR-4 with a WR-5

Ashly recommends using WR-5 units exclusively in new installations. However, where there is an existing installation of a WR-3 or WR-4 which use the three wire bus format, the following wiring instructions allow use of a WR-5 with existing wire runs.

1) Wire the "+18V" wire from the 24.24M to the WR-5 input pin 4.

2) Wire the "Data Out -/Gnd" from the 24.24M to the WR-5 input pin 3.

3) Wire the "Data Out +" from the 24.24M to the WR-5 input pin 2

4) Leave WR-5 pin 1 empty, unless the WR-5 is the last in the chain.

5) Subsequent WR-5 units connect with pins 2, 3, and 4 only

6) On the *last* WR-5 in the chain, connect input pin 1 back to the 24.24M "Data In +" using the wiring formerly used as the terminating line from the WR-3 or WR-4. Be sure to install the jumper J6 on the last WR-5 in series.

7) On the 24.24M, connect "Data In -" to "Data Out -/Gnd" as shown at top of page.
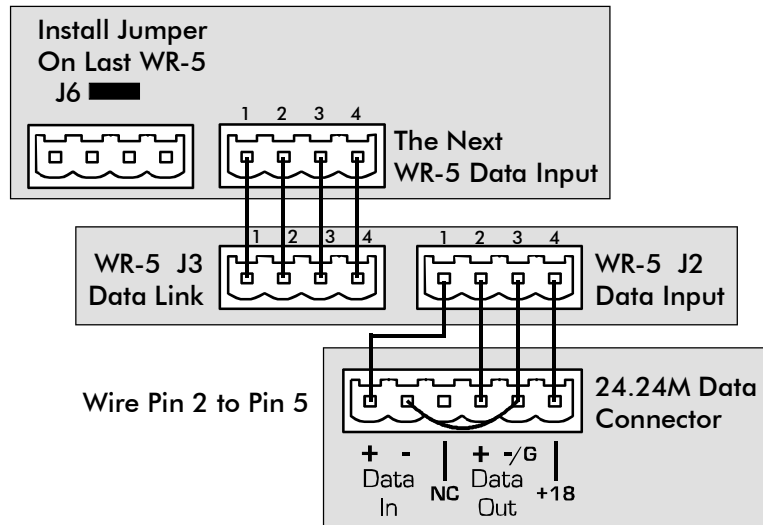
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4. Getting Started

The WR-5 comes with no configuration, therefore it must be programmed using Protea System Software (version 6.4 or greater from the included CD or the Ashly web site). Follow these steps before beginning:

1) Connect the PC to the 24.24M RS-232 Dataport on either front or back panel using a non-video Dsub9 cable.

2) Connect the first WR-5 to the 24.24M euroblock data connector on the back panel.

3) Press IN the RS-232 data switch on the 24.24M back panel. This switch should be IN whenever a WR-5 *and* a PC are connected, and should be OUT whenever either one is connected alone.

At this point, assuming the PC, software, and 24.24M are turned on and properly wired, the WR-5 should have a "heartbeat", meaning an internal small green LED on the PCB will be flashing. If so, proceed with the following steps:

4) In Protea System Software, select the 24.24M Matrix Processor in the Device Menu if it isn't already the current device.

5) Select the Software ID channel number (1-16) across the top of the screen that matches the Device ID currently shown in the 24.24M window, or change the 24.24M Device ID to match the desired 24.24M software data channel.

6) Enable Communications in the Communications menu. If an error message states "slave not responding on Channel _" then verify that the Device ID and software channel are the same. If an error message states "Data response not received", verify the CommPort Assignment under the communications menu. Also under the Communications menu, set baud rate to 9600bps.

7) Under the Options menu, select <Program WR-5 Remotes>, and the WR-5 Configuration window will appear.

8) In the WR-5 Configuration window, click on <Scan for WR5 Remotes>. The complete list of available remotes can be seen in the upper left corner pull down menu. This is the best time to verify from the list of available remotes that the Device ID for each remote matches the 24.24M.

9) Individual remotes can be visually identified by first selecting an available remote from the pull down menu, then clicking <Identify Remote>. The selected WR-5 will flash "Id" in its LED display for 30 seconds.

10) In addition to the permanent, factory programmed remote ID number, the user can enter a remote name for each WR-5 to help identify its function, for example "Under Balcony Fill". Each WR-5 permanently stores its own configuration data when <Save Changes to Remote> is clicked.

5. Programming the WR-5:

The following functions are available for each of six buttons on the WR-5:

1) **Off** - No function assigned and the button's LED remains unlit

2) **Preset Recall** - A single 24.24M preset number (1-35) is assigned. When the button is pressed, the recalled preset number and the letters "PC" are alternately flashed on the WR-5 for

seven seconds, also locking out any other WR-5 action for that time.

3) **Preset Scroll Mode** - A range of 24.24M presets can be assigned to a button and selected by pressing and holding the up/down buttons. Upon release of the up/down button, the displayed preset will load. The button's LED will flash for the duration of the preset scroll operation.

4) **Gain Control** - Protea System Software auto-detects the input/output configuration of the 24.24M. Using <Show Channels> , it is possible to assign any combination of inputs or outputs to a gain control. Furthermore, an upper and lower gain limit can be set in the function range section for each button.

When a gain control button is pressed, its LED flashes and the up/down buttons determine gain. If the up/down buttons sit idle for five seconds, the gain button becomes inactive until being pressed again. *Note: If a <Select 24.24M Outputs> zone checkbox has been selected within the <Zone Setup> area, the WR-5 up/down buttons and numeric display default to the output gain setting for that zone.* If no zone is selected, the display shows "--" as the default.

5) **Channel Engage/Mute** - As with the gain control, the available 24.24M input/output con-figuration is shown. Select any combination of available inputs or outputs and the button will mute or unmute the entire selection.

6) **Zone Source Selection** - Available input channels must first be assigned to the desired output(s) within the 24.24M mixer section, then can be selected in the WR-5 zone source selection <Show Input Channels> pull down menu. Once the desired inputs are assigned to a button, they will toggle on or off with the button and its LED.

When multiple zone source select buttons are assigned uniquely different or overlapping inputs, each button will simply add to or subtract from the other's input selections, unless <Exclusive Source Selection> is checked in the zone setup, in which case *only* the current buttons selected inputs will be used.

Zone Setup - One WR-5 can only control one zone. A zone is a specific 24.24M output or set of outputs as defined in the WR-5 software. In the zone setup frame, the <Select 24.24M Outputs> button provides the available list of 24.24M outputs which can be selected for this WR-5 zone.

Exclusive source selection, as previously mentioned in #6, is a global command for this WR-5 to only allow one button's source selection at a time.

The **Disable Zone Level Control** button is also a global command for this WR-5 to allow input source selections to be changed from the WR-5, but not the output gain. The output gain can still be adjusted from software, but the WR-5 user is locked out from making zone output gain changes.

6. Using More Than Four WR-5 Units

The 24.24M can power up to four WR-5 units. Connecting more than four WR-5 units requires an external power supply, one which provides anywhere from +15VDC to +20VDC and at least 28mA current for each WR-5 connected. Connect the V+ output from the external supply to the first WR-5 input connector (J2) pin 4. *Do not connect the +18V terminal from the 24.24M to the WR-5 or to the external supply, simply leave it unconnected.* Connect the external power supply ground to the 24.24M terminal labelled "Data Out -". Subsequent WR-5's can be daisy chained in the standard method as shown on page two.

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